AMERICAN RAILROAD JOURNAL,

AND

ADVOCATE OF INTERNAL IMPROVEMENTS.

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D. K. MINOR, and GEORGE C. SCHAEFFER, } EDITORS AND PROPRIETORS.] SATURDAY, SEPTEMBER 16, 1837. (Published January 24, 1838) VOLUME VI.—No. 37.

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AMERICAN RAILROAD JOURNAL.

NEW-YORK, JANUARY 24, 1838

☞ See Advertisement of the Louisville, Cincinnatti and Charleston R. R.

We cheerfully re-pu blish the following article at the request of a worthy and esteemed man of science. We desire to add our own earnest request, that the subject may meet the attention that humanity demands for it. Without any reference to the origin of the accident, arising from the want of proper care, to say the least, we call upon all parties concerned in the direction and management of Railroads, to prevent the fearful consequences as described below; resulting, simply, from an improper order of the burden and passage cars in a train. The very frequent practice of placing the passenger cars between the enormous weight of the engine and the still greater weight of the burden cars, has often struck us as at least impolitic, though we had supposed that the practice was a concession to the popular prejudice, that the first place is always the best; which, however true in a line of stage coaches, is most assuredly inapplicable in a train of railroad cars.

Would it not be proper for Directors to forbid the burden cars being placed at the end of the train, and to order them immediately to succeed the engine and tender, in all cases?

From the United States Gazette.

To the Public, and to the Managers, Agents, and Conductors of Railroads.

The following appeal is made in the hope that it may be the means of saving life, or at least, of securing exemption from injury to some fellow-creatures.

The desire to render this appeal as forcible as possible, must be the apology for the gloomy details which accompany it. It is not to gratify the usual morbid propensity to read of distress, or to give food to so depraved an appetite, but if possible to produce such an effect upon all concerned, as may be the means of obviating the evil, which was the source of all the agony of those hours that immediately followed the late accident on the PORTSMOUTH AND ROANOKE RAILROAD, and of the cruel sufferings by which it has been attended.

The writer of this appeal and his only daughter were part of the company who took their places in the centre car of three, which formed a part of the train upon the above named road on the morning of the 10th of December. Our fellow passengers were two ladies, their children, one infant, two female servants, and several gentlemen, the other cars contained an unknown number, but the third car was occupied principally by a party of females, who entered it upon the route, and who were the greatest sufferers by the accident which occurred shortly afterward. They were in high spirits, and were evidently seeking pleasure in their trip, looking forth with gay countenances and cheerful anticipations of enjoyment, at the very moment that they were brought to the most excruciating tortures, some of them to death.

The cars were moving at the rate of 12 or 14 miles an hour, when a crash was heard, and the writer was conscious of a sensation of rising in the air, then a fall, but further than this all sensation and memory fail, save the agony of that moment, when his child was before him, fellow-creatures, including females and children, around, with the instant conviction, that death, in fearful torture, was claiming his victims from among them.

To the scene which followed no pen can give description. The three cars had been crushed to pieces, and all whom they contained, except those only of the second car, were lying torn and mangled, on and among the fragments. The cries, lamentations and prayers of the less injured, distressing as they were, were far less appalling than the faltered accents of the mother who said, "Tell my son to come to me, I am dying." She died that night. Could anything be more agonizing than the situation of that poor girl, who lay with her limbs jammed and crushed by the two iron wheels for hours, whilst all our efforts to relieve her, in the absence of all means, and far removed from aid were in vain. Let us close this detail by stating that two burthen cars were emptied of their loads, and in them were placed twelve of those whose cruel injuries and heart-rending lamentations can never be forgotten, and they were conveyed back to the nearest station. The remainder, with the uninjured, were taken on by another engine and train which arrived in a few hours at the place of the accident,

The loss of life, the wounds and sufferings of the maimed, were not necessary consequences of the accident to the engine, but were occasioned by the excessively reprehensible *custom* of attaching *burthen cars* behind the *passenger cars*. In this instance the facts and circumstances are as follows:—

The road is constructed of light plate rails, laid on wooden string pieces and sleepers. The end of one of the rails was loose, and stood up, it struck the *scraper*, and threw the engine off the track and into the side of the ditch, when its further progress was arrested, the front of the frame being buried in the earth. The *tender* was thrown on its side, against the back part of the engine, which lay partly over the track; against this opposing mass, the light passenger cars were crushed to pieces; and the foot of the baggage car was stove in, as it lay upon the pile of ruins, by the *momentum of a number of burthen cars loaded with cotton, in bales, which formed the rear of the train.*

It is consistent with the laws of *matter* and *motion*, and many circumstances warrant the belief, that if the passenger cars had been placed behind the burthen cars, or if there had been no burthen cars in the train, little or no injury would have resulted to the passengers from the accident.

A pair of horses which were in a car forming part of the train, were apparently uninjured, and a carriage standing upon an open car, was scarcely displaced.

In continuance of his journey, with all

these circumstances fresh upon his memory, and when the papers had announced the deaths of two of the sufferers, the writer entered one of the cars at Washington for Baltimore, and was painfully compelled to witness the attachment of burthen cars behind the train, and this too in the night, when obstructions upon the road are much more to be feared. When the agent came round to examine, and collect tickets, the writer made the circumstance a subject of earnest remonstrance. The agent, with honest candor, acknowledged that the custom was extremely reprehensible, cited instances of injury from the like causes, regretted that his remonstrances had not been attended to, and said that nothing was left to him but to look to his own safety in case of accident.

In publishing this statement, the writer does not mean to censure any one, he makes no charge of neglect or carelessness; but he believes that the parties who had control, were sufficiently aware of the consequence of the sudden arrestation, (and the consequent liability to injury of every thing which intervenes,) of such a moving mass as a train of burthen cars, at the ordinary rate of railroad progress. He feels that this statement is an indispensable duty to his fellow-creatures, called for by circumstances from which, providentially, he is a sufferer only in a slight degree.

Philadelphia, December 23, 1837.

From the U. S. Gazette.

REPORT.

In compliance with the provisions of the charter, the President and Managers of the Union Canal Company respectfully submit to the stockholders their annual report:

The navigation on the canal ceased last fall on the 26th of November, and was resumed on the 22d of March, 1837; since which time it has continued uninterrupted except for a few days in September, while some necessary repairs were made on the feeder. The main line of the canal has required none but the ordinary repairs. It has been all the season in excellent condition, and it continues so still. The supply of water has been ample at all times, and another year's experience confirms the former statement of the board, that entire confidence may be placed in the sufficiency of the supply of water. With the amplest means to procure any additional quantity, the board are confident that the canal may be made able to pass any amount of trade that may be brought to it.

Upon this point, the report of the able and experienced engineer, selected last year to examine the whole line of the canal, and ascertain the practicability of enlarging its dimensions, is conclusive. The board have for many years past had their attention directed to this subject, and the result of long and mature reflection and observation has been, that placed as the Union Canal is, as a connecting link between two highways of much larger dimensions, it cannot be as useful to the public, or as profitable to the stockholders, as it might otherwise be, unless its dimensions be made to correspond with those of the Pennsylvania or Schuylkill Canal. While those works admit of a navigation by boats carrying from fifty to sixty tons, the boats on the Union Canal seldom exceed twenty-five tons burthen; the effect of which is, that much of the trade of the interior of Pennsylvania, which should come to Philadelphia by this canal, is diverted to other improvements. Were it not for this circumstance, the stockholders of the Union Canal Company, would long since have reaped the reward due to the public spirit and enterprise, which distinguished its first projectors. While great expenses are incurred by rival companies, to take away the trade that naturally belongs to us, and to direct it to a rival city, it behoves us to make every exertion to secure the natural advantages which we possess. To this course the proprietors of this Canal are urged, not merely by a regard for the prosperity of our City and State, but chiefly by a judicious attention to the interest and productiveness of the great link entrusted to their management, and in which their funds are invested.

Impressed with these views, the managers promoted an application to the legislature at its last session, for such an appropriation as would enable them to construct a new set of locks, of enlarged dimensions, so as to admit of its being navigated by boats of the same size as those that travel on the State Canal and on the Schuylkill. With a judicious liberality that indicated the high sense which the legislature entertained of this work, and by a larger vote than could be secured for any other part of the improvement bill, an appropriation was made in furtherance of the views of the managers, but unfortunately for us, from circumstances familiar to all, the measure failed of ultimate success.

The Board entertain the most perfect conviction, that it is of vital interest to the stockholders, that the application should be renewed at as early a period as possible of the next session of the legislature, and they entertain strong hopes that the aid of the State may be obtained in a manner, which, while it will afford us a highly improved work, will not interrupt for a single day the navigation of the canal, jeopardize the rights of the loanholder, or impair the prospect of the stockholders to early and profitable returns for their past exertions and perseverance.

The tolls collected during the twelve-months that ended on the 1st instant, amounted to $107,590 37. Although this sum falls considerably below the expectations expressed in the last annual report, it is much larger than the Board ventured to hope for, after they became aware of the commercial crisis which the country was destined to experience.

Two causes have combined to reduce our tolls below those of the preceding year. The first was the almost total failure of the wheat and other grain crops throughout Pennsylvania during the summer of 1836. The disappointment of our farmers was sensibly felt in the revenue of the canal; owing to this cause the transportation of flour and whiskey was reduced to one-half, and that of grain to three-fourths, of what it had been in 1836.

But a still more severe reduction was the effect of the great commercial distress which has marked the present year. Where such a convulsion has occurred, spreading over the whole union; affecting every individual; striking at the prosperity of every interest; arresting every branch of industry, it could not be expected that the Union Canal alone, should have escaped its influence, and that a revenue depending upon the general trade of the country should have remained unimpaired, while the whole prosperity of the country itself was at a stand.

Accordingly the transportation of merchandize fell to one-third of that of last year; that of wool to one-fourth, and that of tobacco to one-sixth. When we reflect that these are among the articles that pay the heaviest tolls on our canal, it is rather a subject of surprise and congratulation that the effect of it should not have been to produce a proportionate reduction in our revenue. That such has not been the case is in part due to the growing wants of the country, which actually occasioned an increase in some important branches, such as the transportation of anthracite, iron ore, gypsum, &c. The board also advert with pleasure to the fact that cotton is a new source of income to the company, this being the first year that the amount has been sufficiently large to justify its being specially enumerated, the same may be said of nails, &c.

The board feel confident, that the depression of the present year may be viewed as entirely of a temporary character, and they doubt not that the returning activity of trade will restore to the canal its due share of business. As an evidence of this, they have pleasure in stating that since the first of November there has been a great revival of business on the canal, and that the tolls of the last three weeks greatly exceed the average of those of the whole year.

Every economy has been practised by the board, consistent with keeping the canal, and feeder in good order; new boilers were obtained for the pond engine; a new trunk was erected, more solid and durable, it is believed, than the old one, to conduct the waters from that place to the canal.

In every other respect the ordinary

expenses have been reduced to as low a point as was consistent with a judicious economy, and notwithstanding the severity of the times, the managers were enabled to redeem the hope given in the last annual report, and to resume the payment of interest on the loans in July last. The interest due in July and October has been paid without difficulty.

The managers have felt the most anxious solicitude to settle all the outstanding claims for damages; part of them to the amount of $5,634 30 have been liquidated, and more would have been done in this respect, if the board had met with a corresponding feeling of liberality and justice on the part of the owners of the property through which the canal and its feeders are constructed. That the work has been of immense advantage to the country through which it passes, and has greatly enhanced the value of every farm on the line, there can be no doubt, and yet, far from producing a favorable effect, the board have been and still continue to be exposed to numerous harassing and extravagant demands.

The managers regret that it becomes their duty to inform the stockholders of the vacancy in the office of president of the company. Their late President, Jacob Gratz, Esq. had for a long time past expressed his desire to be relieved from the duties of that responsible and laborious office, and his intention to decline a re-election.

The managers long indulged the hope that that resolution might be changed; but his impaired health requiring the benefit of travel and change of air, he tendered his resignation of the presidency on the 18th October last, and the managers, while they deeply regretted it, could not, under the circumstances of the case decline to accept it. Mr. Gratz had been a member of the board since the re organization of the company in 1821, and had filled the office of President for three years; no member of the board ever discharged his duties with more zeal or more assiduity.

The board have also to regret the death of Mr. William Y. Birch, one of the oldest and most respectable members of this board.

They have, however, pleasure in announcing to the stockholders, that their colleague, William Boyd, Esq. whose long connexion with, and valuable services to the company, highly qualify him for the situation, has accepted the invitation of the board to undertake the presidency of the company.

Annexed will be found the annual account of the treasurer, likewise a statement of the different articles and tonnage transported on the canal within the year.

By order of the Board of Managers,

C. GRAFFF, *President pro tem.*

Union Canal Office, }
Nov. 21, 1831. }

PARIS AND ST. GERMAIN RAILWAY.

The last "movement" of the Parisians has been by steam. The present *point d' appui* of the excitement of the capital of *La Belle France*, is the result of its first attempt to annihilate distance by the aid of mechanics. Of the opening of the railway from Paris to St. Germain, we extracted an amusing account from the letter of the *Times'* Parisian correspondent.

We shall go more into detail in our notice of this railway than we are in the habit of doing, in the first place, because it forms one of the first practical results, in this branch of art, of the usual superabundance of French theorising; and secondly, that the principal features of the line may be pointed out to such of our countrymen as may be visiting the French capital, who will of course not fail to take a trip by steam to St. Germain. The account which follows is made up partly from the Parisian periodicals and papers of the day.

On entering the station at the Paris terminus and paying for your place, you are immediately struck with the prominent manner in which the national taste for gaudy display, is introduced into an undertaking where every thing is of great weight and giant strength. Having obtained your *billet*, on which is marked the number of the place you are to occupy, you are, on producing it to a *gendarme*, ushered by him into a magnificent saloon, which in the evening is lighted with fine chandeliers. This saloon is in the form of a lunette, with a railing in the centre, to divide the high price from the low-price passengers; each point of the lunette, is the exit from this saloon to the stairs, which lead to each side of the railway; the walls of this waiting saloon are divided into compartments, beautifully painted and decorated in the Louis quatorze style; as also with the medallion portraits of celebrated engineers and men of science. The four principal compartments contain very spiritedly painted figures, emblematic of Science, Industry, Commerce, and Agriculture. In smaller compartments are tablets on which are inscribed the names of Newcomen, Savery, Watt, Washbrough, Trevethick, &c., Papin occupying a place in the centre tablet, in consequence, perhaps, of some new discoveries of Baron Dupin, proving him to be the inventor of railways and locomotive carriages! Elegant and soft cushioned seats, covered with scarlet damask, are provided for the waiting passenger, who is enjoined in the announcements to be at the rendezvous a quarter of an hour before the appointed time of starting—more than half the time occupied in journeying the 11½ miles. The windows of this saloon overlook the railway. The biulding, the interior of which we have just described, is over the commencement of the first tunnel, which is at a little distance from the extreme end of the railway, the line after emerging from it, continuing for a short distance, and terminating in a similar building; and the part between these two erections form a kind of head, analagous to the basin of a canal, where passengers enter the carriages, and the waggons are loaded. The path by the side of the train is here elevated so as to be over the wheels, and level with the floors of the carriages; thus a passenger has merely to walk into the vehicle, any accident from falling being rendered impossible. The same plan is adopted on the Birmingham line, but on the Greenwich, the height to which a passenger has to mount is extremely inconvenient.

The general design of these buildings, and the grand flights of steps, from a point of view taking in the whole, is of a very bold and striking character; and the effect of this design, from being executed in stone, in fact almost cut out of a bed of stone, comes with much force upon an eye accustomed to the dullness of the brick and mortar structures of this country. The facility with which stone can be procured, being often dug from the quarry, hewn into blocks, and used, nearly all upon the same spot, gives the Parisians a great advantage over us, in the power of making a display of taste in the execution of their public works.

The law authorising the formation of a company for the construction of the railway from Paris to St. Germain, was passed on the 9th of July, 1835. It commences, at present, in the Place de l'Europe, on the north of Paris, but it is intended to continue it, by the Rue Tronchet, nearly to the Madelaine, in the very heart of Paris; the termination is at the port of Le Pecq, at St. Germain. The length of the line is 18,430 metres, or 11.160 miles English. At Paris, it is 20.55 metres above the level of the sea (about 127 feet English) and at Le Pecq, 31.497 metres (about 101 feet, the difference in height between the extremities being 8.071 metres (about 26 feet.) The railway passes under the Place de l'Europe in a tunnel of 264 metres, or 844½ feet; then through a cutting, walled on each side until it enters another tunnel of 403 metres, or 1292 feet in length, which leads as far the Rue de la Paix in the village of the Batignolles; it then passes under the exterior Boulevart and the Rue des Dames and Rue de la Paix, and various other streets, by means of bridges. Immediately past that which carries the Rue Cardinet over the railway, are large warehouses occupying an area of 250 m, by 100 m. (800 feet by 320) for receiving goods and merchandise brought to Paris by the railway. The line now proceeds on an embankment until it crosses the Seine a little way past Asnieres by a bridge of five arches of 30 metres each, (about 96 feet); it then continues in a direct line from its first curve before the Batignolles for about 4500 metres (three miles), when between Colombes and Asnieres, there is a curve of 2000 metres (about 1¼ miles) radius. In another direct line it then proceeds as far as the two bridges over the Seine a

little way past Rueil, where the railway takes another curve of a similar radius to the last. These bridges cross two arms into which the Seine is here divided, embracing the Isle du Chiard; one bridge is of three arches of 28 metres (89½ feet) each. In another direct line it then traverses the Forest of Vesinet and terminates at Le Pecq, in a large depot for passengers, and for warehousing merchandise brought up by the rivers Seine and Oise to proceed to Paris by the railway; or which has been brought from Paris to be taken on by these rivers.

The whole length of railway is divided into three straight lines, and three curves. Each curve is on a level, and each straight line is an inclined plane of 1 mil. in each metre (or 1 in a thousand.) It was calculated by the engineers that the same power required by the locomotive to ascend this incline, would be required to turn each curve, in going from St. Germains to Paris; and that the power necessary to turn the curve in going from Paris to St. Germain would be obtained from the impetus acquired by the trade in descending the inclines; so that thus the locomotives would always be kept at an uniform power of traction. On approaching Paris the terminal curve diminishes to from 900 to 800 metres (960 to 852 yards), this being rendered necessary by the locality, and it also serves to deaden the speed of the train as it approaches the end of its course.

By the railroad, the distance between Paris and St. Germain is only a third of the length which it is by the river Seine; the navigation between these two points is, besides being circuitous, extremely difficult, and at times impossible. This remark, however, merely applies to the carriage of heavy goods, as no passenger ever thought of travelling to St. Germain by water. Even by the steam-packets which were established about a year ago between Paris and Rouen, from the circuitousness of the route, and the difficulty of navigation, it was found necessary to convey passengers by diligences to a point about 15 or 16 miles down the river, where they then embarked in the steam-vessel.

The "materiel" possessed by the administration of the railway, consists of a motive force of 12 locomotives of different powers; equal in all to 360 horses. The means of transport consist of—

	Persons
5 Close carriages, having accommodation for,	150
2 Open carriages,	80
8 Diligences,	240
20 Waggons "furnished."	800
70 Waggons "unfurnished,"	2800

Altogether there are vehicles for 4070 persons. There are four double lines of rails from Paris to the Batignolles; three from thence to near Asnieres, and two from thence to St. Germain. As yet, however, only one track is completed, for a considerable distance.

The rails on this line are of great solidity, being twice the weight of those on on the Liverpool and Manchester, the former being about 60lbs. per lineal yard, and the latter only about 30lbs.

The breadth between the rails is 1½ metres, (about 5 feet); between the lines 1.80 m. (about 6 feet) and on each side 1.45 m. (about 4½ feet.) The tunnel of the Batignolles is divided into two galleries, in each of which are two tracks of rails; one gallery was commenced on the 7th June, 1836, and finished, 9th March, 1837; the other is not yet completed. The breadth of each gallery is 7.40 m. (about 23 feet,) the height 6 m., (about 20 feet.

The number of persons going between Paris and St. Germain before the establishment of the railway, by public and private carriages, was estimated at 400,000 a year, or about 1100 per day; it was anticipated that this number would be increased in a tenfold degree; nor do we think the expectation likely to be disappointed: during the day the railway trains are always full, and on fine evenings and Sundays the crush to obtain places, is as suffocating as at the gallery door of a London theatre during the Christmas holidays.

The railway from Paris to St. Germain presents a summary of all the works that any undertaking of a similar nature, is usually called upon to execute. Two tunnels, the one with four double lines of rails under two parallel arches or galleries; the other with also four lines under a single arch. Three grand bridges over the Seine, of which one is of three arches of 150 metres, (480 feet); fifteen bridges for roads and streets, the names of which it is needless for us to mention, to pass over the railway; cuttings to the depth of 17 metres (60 feet,) embankments to the height of from 10 to 20 metres (32 to 64 feet,) and a stone quarry traversed.

The landscape, on the route of the line, is not of any particular interest. On crossing the Seine at Asnieres, are seen the magnificent Arc de Triomphe d'Etoile and the church of St. Dennis. The succeeding country is of a varying character. The forest of St. Germain, near which it terminates is the most extensive in the neighbourhood of Paris, containing 5,550 French acres. Its vicinity to the railroad is already attracting there a new stream of population. The *Maisons Laffitte*, and its vast park of 1500 acres is now, says a Parisian journalist, being transformed into *delicieuse colonie*, where are building under the direction of a young architect, M. Duval, "les constructions les plus variées, les plus agréables, les plus capricieuses, qu'il soit possible de voir." This *delicieuse colonie* is, thanks to the railroad, within forty minutes journey of Paris; and for 8000 francs, or £320, one may become the proprietor of an acre of land, well covered with wood, a pretty house and garden, and near the banks of the Seine.

The railway trains leave Paris at intervals, ten times a day; as also the same number of times from St. Germain. The departures are so arranged, that no more than one train shall be journeying on the railways at once; the time occupied in performing the trip, being from 25 to 30 minutes: indeed this arrangement is at present necessary, as for a great part of the length, the line is only a single track. The fares are from 1 to 2½ francs.

The utility of the railway-system as applied to France cannot be questioned. In the neighbourhood of the capital its effects will be most beneficial. The supplying of the markets of Paris, says a writer in the *Revue Britannique*, with articles of daily consumption, especially milk and vegetables, has been becoming more and more difficult from the increasing population; the great demand impoverishing the lands in the neighbourhood; the kine are being constantly drained to the last drop, and the gardens permanent dunghills. The swiftness of transport on a railway, he adds, being 6 or 7 times that of carriage on common roads, the produce of places six or seven times further distant from Paris than are at present available, would thus be brought into the market. And if lines were to radiate in all directions from the capital, with connecting branches, from 36 to 49 times the present extent of country would be laid under contribution for the supply of Paris.

On the other hand we have heard it objected, that the system of centralization, which gives Paris such a hold upon the whole country, would be increased by railroads; we think, however, that the effect would be the contrary, and that the general adoption of the railway system from the capital to the provinces, and from one province to another, would tend to equalize rather than centralize, influence and wealth, as well politically as commercially.—*Mechanic's Mag.*

The Report of the Liverpool and Manchester road is always regarded with interest, and particularly so after the present reverses which have operated to the great detriment of a road so entirely depending upon commercial prosperity, for the extensive transportation of merchandise. The enormous cost of the road is likewise to be considered; still the semi-annual dividend declared, is £4. 10s on the £100. The latest quotation of its stock, is £201 per share.

LIVERPOOL AND MANCHESTER RAILWAY—ELEVENTH HALF-YEARLY MEETING.

In their last Half-year's Report, the Directors had to notice that their general depression in trade, which for several months had occasioned a serious diminution in the traffic by the railway. They regret to be obliged to state, that the distress which, at that time, had just overtaken the mercantile community, has since increased and extended, in a degree almost unprecedented; destroying con-

fidence, curtailing manufactures, diminishing exports, and assuming the fearful character of a national calamity.

It could not be expected that the railway, considered as a public carrying establishment, should escape the general pressure. Intimately connected with the trade and commerce of the country, the traffic by the railway, in the *Merchandise Department*, has diminished with the diminished trade of this great commercial and manufacturing district. In the travelling department the receipts have somewhat exceeded those of the corresponding period of 1836; but our judgment of the receipts in both departments, should be formed, not by simple comparison with the receipts of last year, but by an estimate of that *ratio of increase*, the anticipation of which was warranted by former experience, and which only the prevailing stagnation in all mercantile adventure could have prevented.

Since the meeting of proprietors in March last, the Grand Junction Railway has been opened, for the conveyance of passengers between Liverpool and Manchester, and Birmingham. Proprietors are aware that the engines and carriages of the Grand Junction Company pass along the Liverpool and Manchester line, as far as the Warrington Junction. A considerable accession of revenue may be expected from this source. The last half-year's receipts, however, are not improved by any income from this quarter; the opening of the Grand Junction Railway not having taken place till the 4th of the present month.

The Act of Parliament for powers to raise additional capital for the relaying of the road with stronger rails, and for the general completion of the works, has received the Royal assent. By this Act, the Company are empowered to hold their Annual General Meeting for choosing Directors, in January, in each year, instead of in March. By this alteration, shareholders will be saved the inconvenience of attending a formal meeting in March, so soon after the more important meeting in January. Proprietors, accordingly, will be so good as to recollect, that the choosing of five Directors, in the place of those which go out by rotation, will take place at the General Meeting in January next.

The relaying of the road with stronger rails has been continued with little intermission through the last six months; the whole line will be completed in a few weeks from the present time.

The building of a handsome and commodious arrival station at Manchester, has been commenced; and the last suit of offices and package-rooms, at the Lime street station, is now in progress. These works will be completed before the meeting of proprietors in January next.

In their last Report, the Directors informed the proprietors, that in the same management of the railway, their primary object had been to provide that full satisfaction to the public, which affords, in its turn, the surest basis for the permanent prosperity of the railway.

In the half-year just closed, the coaching department has been conducted in a manner superior to what they had previously been able to accomplish. There have been more departures in the day, and the trips have been performed with greater expedition, and with more uniform punctuality; add to which, passengers at the Liverpool end are brought by the new tunnel, to the middle of the town, instead of being set down in Crown-street, a mile and a half from the centre of business. The means employed to attain this end have been principally a larger and superior class of locomotive engines, and very complete machinery for working the new tunnel.

The Directors regret that these improved, but at the same time, more costly arrangements, should have been brought into operation in a season of commercial difficulty; that when the Company were prepared to meet an enlarged business, the aggregate traffic should have been curtailed; that the scale of operations and expenditure should have been enlarged, in expectation of an increased business; while, owing to the peculiar circumstances and pressure of the times, the receipts have been diminished. The Directors nevertheless feel confident that the unremitting efforts of the Company to satisfy the expectations of the public will ultimately conduce to the permanent prosperity of the concern.

The following is a statement of Receipts and Disbursements for the Half-year ending the 30th June, 1837.

RECEIPTS.

	£.	s.	d.
Coaching Department,	59,956	4	6
Merchandise ditto,	42,698	13	4
Coal ditto,	3,296	18	2
	105,951	16	0

EXPENSES.

Bad debt,	account	£221	18	0
Coach dis.	do.	10296	11	6
Carrying dis.	do.	9646	12	1
Coal dis.	do.	313	1	2
Cartage (Liv.)	do.	321	9	1
Do. (Man.)	do.	3613	2	0
Charge for direc.	do.	366	9	0
Com. (coach'g)	do.	59	9	6
Do. (carrying)	do.	201	0	3
Coach office es.	do.	840	7	10
Engin'g. dep.	do.	125	0	0
Interest	do.	6253	8	3
Loco'e. power	do.	22154	19	6
Law disburs.	do.	150	0	0
Main. of way	do.	4113	4	3
Office esta.	do.	1002	2	8
Police	do.	1158	17	8
Petty disburse.	do.	50	5	2
Rent	do.	494	19	7
Repairs to walls and fences	do.	876	7	3
Stationary engine dis.	do.	965	6	6
Tunnel dis.	do.	476	17	3
Tax and rate account		2509	18	3
Waggon dis.	do.	2861	7	2
North tunnel	do.	1116	19	6
		70189	13	5
Nett profit for six months		35762	2	7

Statement of Receipts and Expenditures on Capital Account, from the commencement of the undertaking to 30th June, 1837.

The Treasurer, Dr. to—

Amount of joint capital in shares and loans	1,292,657	10	0
Amount of dividends not paid	1,141	6	2
Amount of reserved fund and interest	4,262	4	8
Surplus in hand after payment of the 13th dividend in Feb. 1837	6,377	15	11
Nett profit for the half-year ending the 30th June, 1837	35,762	2	7
	1,340,200	19	4

The Treasurer, Cr.

By amount of expenditure on the construction of the way and the works, including the new station in Lime-street, &c.	1,326,536	10	6
By ditto of balance of book debts due to the Company.	13,664	8	10
	1,340,200	19	4

By the foregoing statement of Disbursements, and a reference to previous reports, it will be perceived, that the gross receipts for the six months, ending 30th June, 1837, *fall short* of the corresponding receipts of 1836, by 3,405*l.*; whereas the receipts of the half-year, ending 30th June, 1836, *exceeded* those of 1835, by more than that amount.

While the receipts have been thus diminished, proprietors are aware that a half-yearly dividend must now be paid, on the first *Instalment of* 10*l. per Share* on the 7,968 new fifty pound shares, created in July last, as well as on 136½ new shares (issued in quarters) which the Directors were empowered to sell, to make up the aggregate capital authorised by the Act.

To the nett profit as per the foregoing statement	35,762	2	7
Must be added the surplus after paying the half-year's dividend in January last	6,377	15	11
Making a disposal nett balance of	42,139	18	6

The shares on which a dividend is to be declared are—

The old shares as heretofore equaling	£ 7,968¾	100 shares.
The 10*l* instalment on 7,968 Fifty Pound shares equal'g	796⅛	100 shares.
And on the new shares sold by the Directors	136⅛	100 shares.
Equaling in all	8,902¼	100 shares.
The Directors recommend to the proprietors a dividend on this number of shares of 4*l*. 10s. per share, making 40,059*l*. 4s. 6d., which, deducted from the disposable fund above stated	42,139 18 6	
	40,059 4 6	
Will leave a balance of	2,080 14 0	

To be carried to the credit of the next half-year's account.

CHARLES LAWRENCE,
Chairman.

Liverpool, July 26, 1837.

BABBAGE'S CALCULATING MACHINE.

Much curiosity has been excited from time to time in regard to this far-famed miracle of art. The following account of the present state of the machine, is taken from a late work of Mr. Babbage, entitled, the "Ninth Bridgewater Treatise," and which, by the way, is no part of that Series, but rather a criticism upon certain of the actual Bridgewater Treatises.

"The nature of the arguments advanced in this volume having obliged me to refer more frequently than I should have chosen, to the calculating engine, it becomes necessary to give the reader some brief account of its progress and present state.

"About the year 1821, I undertook to superintend, for the Government, the construction of an engine for calculating and printing mathematical and astronomical tables. Early in the year 1833, a small portion of the machine was put together, and it performed its work with all the precision that had been anticipated. At that period circumstances which I could not control, caused what I then considered a temporary suspension of its progress; and the Government on whose decision the continuance or discontinuance of the work depended, have not yet communicated to me their wishes on the question. The first illustration I have employed is derived from the calculations made with this engine.

"About October, 1834, I commenced the design of another and far more powerful engine. Many of the contrivances necessary for its performance have since been discussed and drawn according to various principles; and all of them have been invented in more than one form. I consider then, even in their present state, as susceptible of practical execution; but time, thought and expense, will probably improve them. As the remaining illustrations are all drawn from the powers of this new engine, it may be right to state, that it will calculate the numerical value of any algebraical function; that, at any period previously fixed upon, or contingent on certain events, it will cease to tabulate that algebraic function, and commence the calculation of a different one, and that these changes may be repeated to any extent.

"The former engine could employ about 120 figures in its calculations; the present is intended to compute with about 4000.

"Here I should willingly have left the subject; but the public having erroneously imagined, that the sums of money paid to the workmen for the construction of the engine were the remuneration of my own services for inventing and directing its progress: and a Committee of the House of Commons having incidentally led the public to believe that a sum of money was voted to me for that purpose, I think it right to give to that report the most direct and unqualified contradiction."—p. 170.

EXPLOSION OF STEAM-BOILERS.

The valves being in order, it is generally considered that explosions arise chiefly from the sinking of the water below a certain level. M. Sorel has proposed a method to obviate this by the introduction of a tube into the boiler descending a little lower than the said level. The orifice of the pipe is to be kept closed by means of a valve carried by a float, which sinking, as the water descends, beneath the desired level, opens the valve and permits the steam to pass out.—*London Railway Mag.*

FORCE OF THE WIND.

Few persons can have any idea of the excessive powor of the wind in high velocities. It appears from our table, No. 3, that at 40 miles an hour, which, is a high wind, the force is no less than 6lbs. to the square foot. How many of our glass windows would stand even this pressure with doors open behind them? At 80 miles an hour, which is a hurricane, the pressure is no less than 24·56lbs. per square foot. Against such a wind as this, it would be exceedingly difficult for the strongest man to keep his legs; to walk against it would be out of the question. At 100 miles an hour, it is said the wind would sweep every thing before it; the pressure would be 38·36lbs. to a square foot. There are few houses of any size, which standing singly, would not present 1.000 square feet. In such a hurricane the power of the wind would be no less than 38,360lbs. or above 17 tons, against a house with 1,000 square feet of surface. Its chance of resisting so enormous a force would therefore be very little.—*Ib.*

INVENTION TO SUPERSEDE THE USE OF STEAM.

An invention we have heard, is shortly expected to be laid before the public, by which steam will be, in a great measure, if not wholly, superseded. We are unacquainted with the particulars of the invention, but we have been assured, from two several quarters, that it is simple and efficacious; and is now waiting for the completion of one point in the universal application, which, it is supposed, cannot be long an obstacle.—*Ib.*

STEAM-ENGINES WITHIN THE BOROUGH OF BIRMINGHAM.

By a report made to the Birmingham Philosophical Institution, October, 1836, it appears that 169 steam-engines had been erected from 1780 to that period, of which 17 had been erected in 1834, and 22 in 1835, The total horse power was equal to 2,790 horses. Within the same period engines equal to 162 horses' power had become void, or removed. Of those erected and estimated in horse power, 275 were used for grinding flour; 6,770 for working metals; 279 for pumping water; 87 for glass grinding; 97 for working wood; 44 for paper making and glazing; 37 for grinding clay; 61 for grinding colours and chemicals; and 50 for sundry purposes. The estimated consumption of coals is 216 tons per day; estimated number of persons employed, 4,000 males, and 1,300 females; and the estimated amount of power hired out, equal to 450 horses. These estimates are confined to engines within the borough, and, of course, do not include the great Soho works of Bolton and Watt.

Of the 1,770 horse power employed in working metals, It is computed that 162 is used by iron founders, first applied in 1788; 570 in rolling copper, brass, and other metals, first applied 1790; 150 in drawing wire, first applied in 1808; 201 in iron forges, and wrought iron mills, first applied in 1810; 74 in nail cutting, first applied in 1813; 104 in screw making, first applied in 1819; and 34 in drawing metal tubes, first applied in 1822.—*Ib.*

GLASS CLOTH.

Richard Barker and Son, of Ossett-street-side, near Dewsbury, have fonnd out an improvement in glass, and have it so pliable that they can make a cloth or fabric of the finest texture. They have pieces of this glass two yards and a-half long and from nine inches to thirty-six inches in breadth; they have also made some very fine ladies' head-dresses or ornaments from this material, which are considered both very curious and useful. —*English Paper.*

RESISTANCE OF RAILWAY TRAINS.

Dr. Lardner exhibited some new investigations on the resistance of railway trains. The principal new element introduced was that of the gyration of the wheels, which seems to have been neglected by Pambour and others. Dr. L. gave the data and results of some expements to which he had applied his theorems; and, what is very singular, found the resistance of the train, abstracting the excess of resistance of the engine, to be eight pounds and a half per ton, which he still thought was a little too much, coinciding very nearly with eight pounds, which Mr. Herapath afterwards said he had deduced from some experiments of his own, and used in calculations. We expected to be able to give Dr. Lardner's theorems, but have not been furnished with them. Mr. Vignolle observed that Wood had taken into account the rotation of the wheels; on which it was remarked, that Wood's theorems were never used. Dr. Lardner than made some observations on the practical unimportance of atmospheric resistance in his experiments, which we believe was misunderstood to mean a general neglect of the atmosphere; whereas, from what he afterwards said to us, he meant that his experiments were made at a velocity of only nine or ten miles an hour, and with heavy trains, exposing so little surface as to render the resistance unimportant. Dr. Robinson and Mr. Vignolles decidedly expressed their dissent from neglecting the effect of the air, and Mr. Herapath stated in some experiments he had made, that to a load of thirty tons the air at a velocity of thirty-two miles an hour, that at which he travelled, added an apparent load of twenty-one tons more, and that trains which in a non-resisting air would move at a rate of sixty miles an hour, were by the air's resistance reduced to about forty. Mr. Roberts, of Manchester, made several pertinent observations, and so did Mr. Hardman Earle. Mr. R. said that he once made a top which would spin for thirty-seven minutes, but when gilded, only seventeen minutes—a practical hint for making pendulums. Dr. L. concluded with expressing a wish that the Association would direct some experiments to be made on this very important and interesting subject, which was loudly re echoed by the section.—*London Railway Magazine.*

CAVENDISH'S EXPERIMENTS.

Government has granted 500*l.* to the Royal Astronomical Society towards repeating the experiments of the Hon. Mr. Cavendish, made about half a century since, and Mr. Francis Baily has granted the use of apartments in his house. With the experience of the present day great discoveries, towards unlocking the secrets of many phenomena, are expected to result from the inquiry. It will take from one to two or more years to finish them when begun —*London Railway Magazine.*

LARGE METEORIC STONE.

A recently received Halifax (Nova Scotia) paper says, that while several of the inhabitants of Montmorot, in the Jura, were at work in the vineyards which are close to the old castle there, they heard a noise which sounded like a distant clap of thunder, and saw a mass fall down into the vineyard of an innkeeper, named Michaud. On being examined, it was found to be about five feet high and three feet broad. It is of a grey colour, resembling pumice-stone, but marked with ferruginous particles. —*Ib.*

IMPROVEMENT IN THE STEAM ENGINE.

Professor Nollet, employed in the Museum of the State, has just completed a most important invention; viz., a steam-engine exempt from all danger of explosion, not expensive, occupying but little space, and the moving power of which, at the same temperature as the ordinary machines, has a power six times as great, reducing by one-fifth the consumption of fuel, which is an immense advantage, not only in respect to economy, but to the smaller space which may be required for the stock of coals.—*Brussels Paper.*

NEW LOCK.

M. Lettestu has invented a lock, by which the bolt is drawn into the staple by a circular instead of a rectilinear motion. When shut it is said to resist, by its construction, both the opening of the door and the slipping of the frame, (chambranle). The key to move the bolt acts in a nut composed of several little rundles (rondelles); springs carried by some, fastened by others, and unfastened by projections conveniently constructed on a bit of the key, form the garniture or guard of the lock. The several pieces composing the nut, although of a similar exterior dimensions, are various within, and may be replaced from one lock to the other.

COLOSSAL STEAMERS.

In addition to the information we supplied of the great steamer building at Curling and Young's in our last, the *Morning Herald* has furnished the following:—

"After deducting her engine-room, she will have ample accommodation for 500 passengers, 25 days' fuel, and 800 tons measurement goods, exclusive of luggage, provision and stores. The enterprising spirit evinced, may be readily gathered from the following estimated expenses of the voyage out and home again. They are as follows:—

Wages, provisions, and stores for crew .	£ 666	0	0
Coal out and home .	1,140	0	0
Port charges, &c. .	1,378	0	0
Insurance, interest, &c.	2,000	0	0
	£5,184	0	0

List of subscribers to the Railroad Journal, who have paid since the 1st *of August last.*

J. W. Judson,	Ashford, Con	July 1,	1838
S. Bailey,	Bolivar, Tenn.	March 1,	1838
E. Morris,	La Grange, "	Jan. 1,	1838
J. Noonan,	Baltimore, Md.	" 1,	1838
N. B. Bufford,	Frankfort, Ky.	July 1,	1837
W. R. Hopkins,	Chambly, L. C.	" 1,	1837
L. O. Reynolds,	Savannah, Ga.	Jan. 1,	1838
R Higham,	Utica, N. Y.	" 1,	1838
L. D. Jaques,	Painesville, Ohio.	July 1,	1838
J. R. Grout,	St. Josephs, Mich.	Jan. 1,	1838
Hugh Ronalds	Albion, Ill.	" 1,	1838
Dr. J. W. Francis,	City,	" 1,	1837
D. B. Blanchard,	Shawneetown, Ill.	" 1,	1838
Lucius Lyon,	Detroit, Mich.	Aug 1,	1837
J. Gore,	Black Creek Valley, Va.	May 1,	1838
Central R. R. & Banking Co.	Savannah, Ga. (Advertising)	Aug.	1837
Do Do	Do (Subscription)	Sept. 1,	1838
Mr. Schoenever,	Brooklyn. N. Y.	Jan. 1,	1838
E. C. Billings,	Charleston, S.C.	" 1,	1839
Hugh Gillean,	Harpers Ferry, Va.	Oct. 1,	1837
Western R. R. Co.	Jackson, Tenn.	Jan 1,	1837
G. A. Niccolls,	Douglasville, Pa.	" 1,	1837
R. H. Eddy,	Boston, Mass.	" 1,	1838
Judah Dobson,	Philadelphia, Pa.	" 1,	1838
W. Gregory,	Pensacola, Fa.	" 1,	1839
John Rutter,	Yorkville, N. Y.	" 1,	1838
J. B. Jervis,	Little Falls, N. Y.	" 1,	1838
T. J. Waters,	City,	" 1,	1838
N. Y. & Erie R. R. Co.	"	" 1,	1838
L. N. Vilbard,	Orange, N. Y.	" 1,	1838
E. A. Douglass,	Mauch Chunk, Pa.	Dec. 6,	1837
A. Barrett,	Lockport, N. Y.	Jan. 1,	1838
A. & A. H. Belknap,	Newbury, N. Y.	Oct. 20,	'37
A. Stein,	New Orleans, La.	Sept. 1,	1838
J. Drake,	Cincinnati, Ohio.	Jan. 1,	1838
T. H De Witt,	Stone Wall Mills, Va.	" 1,	1838
R. Carter,	Bushnell's Basin, N. Y.	" 1,	1838
Kamthers & Erskine,	Salt Sulphur Springs, Va.	May 10,	1838
J. De Frias,	Havana, Cuba,	Jan. 1,	1838
J. Archibald,	Carbondale, Pa.	" 1,	1838
W. B. Gilbert,	Dixon's Ferry, Ill.	Oct. 1,	1838
R. J. Davis,	Tye River, Va.	Jan. 1,	1838
Minard Sturgess,	New Albany, Ind.	" 1,	1838
C. W. Mills,	Natchez, Miss.	Oct. 1,	1837
F. Spofford,	Bucksport, Me.	Jan. 1,	1838
James Hayward,	Cambridge, Mass.	" 1,	1838
S. Abbott,	Woburn, "	" 1,	1838
W. N. Grover,	Canton, Ill.	" 1,	1838
M. Coryell,	Harrison, Ohio,	Sept 1,	1837
T. S. Brown,	Dunkirk. N. Y.	Aug. 26,	1837
E. Ross Bittle,	Cooseta, Ala.	July 1,	1838
P. Mitchell,	City,	Jan. 1,	1838
W. B. Thompson,	Richmond, Va.	Nov. 22,	1838
Engineer Office,	Washington, D. C.	Jan. 1,	1838
Elihu Wing,	Quaker Hill, N. Y.	" 1,	1838
Samuel Hall.	Princeton, Inda.	July 1,	1838
Durfee, Coleman & Co.	Hudson, N. Y.	Jan. 1,	1838
Do. Do.	Do. (Advertising)	Aug. 1,	1837
Allen Harris,	Central Village, Con.	Mar. 20,	1838
W. J. Lewis,	Columbia, S. C.	Jan. 1,	1839
J. J. Myers,	Poplar Springs, S. C.	" 1,	1839
E. Lord,	Tappan, N. Y.	Sept. 1,	1837
Dan. Whitney,	Navarino, Wisconsin,	Jan. 1,	1839
Jos. F. Tolson.	Jersey City,	" 1,	1839
Hugh Fitz Patrick,	Rock Run, Md.	" 1,	1839
Daniel Mc Clain,	Philadelphia, Pa.	" 1,	1839
Alfred Hovey,	Saganaw, Ill.	" 1,	1839
A. A. Dexter,	Montgomery, Ala.	" 1,	1838
Do. Do.	Do. Advertising	" 1,	1839
E. & G. W. Blunt,	City,	" 1,	1838
Do. Do.	Do. Advertising,	" 1,	1839

*** Subscribers who desire to be supplied with missing numbers, will do well to apply for them soon. We shall always take pleasure in furnishing them if we have them to spare.

☞ Volume Six will be completed as speedily as possible. The next, or Volume for 1838, will be published in a more convenient form for preservation.

LOUISVILLE, CINCINNATTI, AND CHARLESTON RAILROAD.

NOTICE TO CONTRACTORS.—Sealed Proposals will be received at the Office of the Company in Columbia, S. C., until the 15th day of February next, for the graduation and masonry of that portion of the Road from Columbia to the crossing of the Congaree River, in the vicinity of McCord's Ferry, being 25 miles in extent.

Also, for the construction of a Bridge of 400 feet in length, on the Congaree River, to be built on stone piers and abutments, for which there are suitable quarries in the neighborhood.

The plans and profiles of the line will be ready for inspection at the Office of the Resident Engineer, in Columbia, S. C., after the 10th day of February.

So soon as the surveys for location, now in progress, are completed, that part of the Road extending from McCord's Ferry to the Charleston and Hamburg Railroad, at Branchville, will be put under contract, of which due notice will be given.

WM. GIBBS Mc NEILL,
Chief Engineer.

☞ The Railroad Journal, N. Y. Courier & Enquirer, N. York; Providence Journal, Providence, R. I.: Atlas, Boston; Philadelpia Enquirer, Philadelphia; will publish the above notice 6 times, send a copy of the paper to the Office in Charleston, S. C., and a certified copy of their account for payment.

Jan. 12 fmw6

NEW ARRANGEMENT.

ROPES FOR INCLINED PLANES OF RAILROADS.

WE the subscribers have formed a co partnership under the style and firm of Folger & Coleman, for the manufacturing and selling of Ropes for inclined planes of railroads, and for other uses, offer to supply ropes for inclined planes, of any length required without splice, at short notice, the manufacturing of cordage, heretofore carried on by S. S. Durfee & Co., will be done by the new firm, the same superintendent and machinery are employed by the new firm that were employed by S. S. Durfee & Co. All orders will be properly attended to, and ropes will be shipped to any port in the United States.

12th month. 12th, 1836. Hudson, Columbia County, State of New-York.

ROBT. C. FOLGER.
33—tf GEORGE COLEMAN.

AMES' CELEBRATED SHOVELS, SPADES, &c.

300 dozens Ames' superior back-strap shovels.
150 do. do. do. plain do.
150 do. do. do. cas steel Shovels & Spades
150 do. do. Gold-mining Shovels
00 do. do. plated Spades.
50 do. do. socket Shovels and Spades

Together with Pick Axes, Churn Drills, and Crow Bars (steel pointed), manufactured from Salisbury refined iron—for sale by the manufacturing agents,

WITHERELL, AMES & CO.
No. 2 Liberty street, New-York.
BACKUS, AMES & CO.
No. 8 State-street, Albany.

N. B.—Also furnished to order, Shapes of every description, made from Salisbury refined Iron. v4-tf

MACHINE WORKS OF ROGERS, KETCHUM AND GROSVENOR, Paterson, New-Jersey.

The undersigned receive orders for the following articles, manufactured by them, of the most superior description in every particular. Their works being extensive, and the number of hands employed being large, they are enabled to execute both large and small orders with promptness and dispatch.

RAILROAD WORK.

Locomotive Steam-Engines and Tenders; Driving and other Locomotive Wheels, Axles Springs and Flange Tires; Car Wheels of cast iron, from a variety of patterns, and Chills; Car Wheels of cast iron, with wrought Tires; Axles of best American refined iron; Springs; Boxes and Bolts for Cars.

COTTON, WOOL, & FLAX MACHINERY,

Of all descriptions and of the most improved patterns, Style, and Workmanship.

Mill Geering and Millwright work generally; Hydraulic and other Presses; Press Screws; Callenders; Lathes and Tools of all kinds; Iron and Brass Castings of all descriptions.

ROGERS, KETCHUM & GROSVENOR,
Paterson, N. J. or 60 Wall-st. New-York
51tf

FRAME BRIDGES.

THE undersigned, General Agent of Col. S. H. LONG, to build Bridges, or vend the right to others to build on his Patent Plan, would respectfully inform Railroad and Bridge Corporations, that he is prepared to make cohtracts to build, and furnish all materials for superstructures of the kind, in any part of the United States, (Maryland excepted.)

Bridges on the above plan are to be seen at the following localities, viz. On the main road leading from Baltimore to Washington; two miles from the former place. Across the Motawamkeag river on the Military road in Maine. On the national road in Illinois, at sundry paints. On the Baltimore and Susquehanna Railroad at three points. On the Hudson and Paterson Railroad in two places. On the Boston and Worcester Railroad, at several points. On the Boston and Providence Railroad, at sundry points. Across the Contoocook river at Hennikar, N. H. Across the Souhegan river, at Milford, N. H. Across the Connecticut river, at Hancock, N. H. Across the Androscoggin river, at Turner Centre, Maine. Across the Kennebec river, at Waterville, Maine. Across the Genesee river, at Squakiehill, Mount Morris, N. Y. Across the White River, at Hartford, Vt. Across the Connecticut River at Lebanon, N. H. Across the mouth of the Broken Straw Creek, Penn. Across the mouth of the Cataraugus Creek, N. Y. A Railroad Bridge diagonally across the Erie Canal, in the City of Rochester, N. Y. A Railroad Bridge at Upper Still Water, Orono, Maine. This Bridge is 500 feet in length; one of the spans is over 200 feet. It is probably the *firmest wooden bridge* ever built in America.

Notwithstanding his preseet engagements to build between twenty and thirty Railroad Bridges, and several common bridges, several of which are now in progress of construction, the subscriber will promptly attend to business of the kind to much greater extent and on liberal terms.

MOSES LONG.
Rochester, Jan. 19th, 1837. 4—y

STEPHENSON,

Builder of a superior style of Passenger Cars for Railroads,

No. 264 Elizabeth street, near Bleecker street,
NEW-YORK.

RAILROAD COMPANIES would do well to examine these Cars; a specimen of which may be seen on the New-York and Harlaem Railroad, now in operation.

ROACH & WARNER,

Manufacturers of OPTICAL, MATHEMATICAL AND PHILOSOPHICAL INSTRUMENTS, 293 Broadway, New-York, will keep constantly on hand a large and general assortment of Instruments in their line.

Wholesale Dealers and Country Merchants supplied with SURVEYING COMPASSES, BAROMETERS, THERMOMETERS, &c. &c. of their own manufacture, warranted accurate, and at lower prices than can be had at any other establishment.

☞ Istruments made to order and repaired.
1y—14

RAILWAY IRON, LOCOMOTIVES, &c. &c.

THE subscribers offer the following articles for sale:—

Railway Iron, flat bars; with countersunk holes and mitred joints,									lbs
350 to ns 2by	½,	15 ft in length, weighing					4 $\frac{85}{100}$	per ℓ
280 "	2 "	½,	"	"	"		3 $\frac{50}{100}$	"
70 "	1¼ "	½,	"	"	"		2½	"
80 "	1¼ "	¼,	"	"	"		1 $\frac{25}{100}$	"
90 "	1 "	¼,	"	"	"		⅞	"

with Spikes and Splicing Plates adapted thereto. To be sold free of duty to State governments, or incorporated companies.

Orders for Pennsylvania Boiler Iron executed.

Rail Road Car and Locomotive Engine Tires, wrought and turned or unturned, ready to be fitted on the wheels, viz. 30, 33, 36, 42, 44, 54, and 60 inches diameter.

E. V. Patent Chain Cable Bolts for Railway Car axles, in lengths of 12 feet 6 inches, to 13 feet 2½, 2⅔, 3, 3⅓, 3¾, 3½, and 3⅔ inches diameter.

Chains for Inclined Planes, short and stay links, manufactured from the E. V. Cable Bolts, and proved at the greatest strain.

India Rubber Rope for Inclined Planes, made from New Zealand Wax.

Also, Patent Hemp Cordage for Inclined Planes, and Canal Towing Lines.

Patent Felt for placing between the iron chair and stone block of Edge Railways.

Every description of Railway Iron, as well as Locomotive Engines, imported at the shortest notice, by the agency of one of our partners, who resides in England for this purpose.

A highly respectable American Engineer resides in England for the purpose of inspecting all Locomotives, Machinery, Railway Iron, &c. ordered through us.

A. & G. RALSTEN & CO.,
28 tf Philadelphia, No. 4 South Front-st.

ARCHIMEDES WORKS.

(100 North Moore-street, N.Y.)

THE undersigned beg leave to inform the proprietors of Rail Roads, that they are prepared to furnish all kinds of Machinery for Rail Roads, Locomotive Engines of any size, Car Wheels, such as are now in successful operation on the Camden and Amboy Rail Road, none of which have failed.—Castings of all kinds, Wheels, Axles and Boxes, furnished at the shortest notice.

H. R. DUNHAM & CO.
NEWYORK, February 12th, 1836. 4—ytf

PATENT RAILROAD, SHIP AND BOAT SPIKES.

⁂ The Troy Iron and Nail Factory keeps constantly for sale a very extensive assortment of Wrought Spikes and Nails, from 3 to 10 inches, manufactured by the subscriber's Patent Machinery, which after five years successful operation, and now almost universal use in the United States, (as well as England, where the subscriber obtained a patent) are found superior to any yet ever offered in market.

Railroad companies may be supplied with Spikes having countersink heads suitable to the holes in iron rails, to any amount and on short notice. Almost all the Railroads now in progress in the United States are fastened with Spikes made at the above-named factory—for which purpose they are found invaluable, as their adhesion is more than double any common Spikes made by the hammer.

⁂ All orders directed to the Agent, Troy, N.Y. will be punctually attended to.

HENRY BURDEN, Agent.
Troy, N.Y., July, 1831.

⁂ Spikes are kept for sale, at factory prices, by I & J. Townsend, Albany, and the principal Iron Merchants in Albany and Troy; J. I. Brower, 222 Water-street, New-York; A. M. Jones, Philadelphia; T. Janviers, Baltimore; Degrand & Smith, Boston.

P. S.—Railroad companies would do well to forward their orders as early as practicable, as the subscriber is desirous of extending the manufacturing so as to keep pace with the daily increasing demand for his Spikes.

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